AMENDMENTS TO THE CLAIMS

1. (Currently Amended) An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:

(a) the nucleotide sequence set forth in SEQ ID NO: 2;

(b) a nucleotide sequence encoding the polypeptide set forth in SEQ ID NO: 1;

(c) a nucleotide sequence which hybridizes ~~under moderately or highly stringent conditions~~ to the complement of (a) or (b)~~,~~ at (i) 42°C in a buffer comprising 0.015M sodium chloride, 0.0015M sodium citrate and 50% formamide, or (ii) at 65-68°C in a buffer comprising 0.015M sodium chloride and 0.0015M sodium citrate, and wherein the encoded polypeptide, when heterodimerized to human α2 polypeptide, ~~has an activity of the human α2/β10 heterodimer; and~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(d) a nucleotide sequence complementary to any of (a)-(c).

2. (Currently Amended) An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence encoding a polypeptide that is at least about ~~70,~~75, 80, 85, 90, 95, 96, 97, 98, or 99 percent identical to the polypeptide set forth in SEQ ID NO: 1, wherein the polypeptide, when heterodimerized to human α2 polypeptide, ~~has an activity of the human α2/β10 heterodimer has~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(b) a nucleotide sequence encoding an allelic variant or splice variant of the nucleotide sequence set forth in SEQ ID NO: 2, wherein the encoded polypeptide, when heterodimerized to human α2 polypeptide, ~~has an activity of the human α2/β10 heterodimer~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(c) a nucleotide sequence of SEQ ID NO: 2, (a), or (b) encoding a polypeptide fragment of at least about 25 amino acid residues, wherein the polypeptide, when heterodimerized to human α2 polypeptide, ~~has an activity of the human α2/β10 heterodimer~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(d) a nucleotide sequence ~~of SEQ ID NO: 2 or (a)-(c)~~ comprising a fragment of at least about 16 nucleotides ~~thereof;~~ of SEQ ID NO: 2, or of (a)-(c);

(e) a nucleotide sequence which hybridizes ~~under moderately or highly stringent conditions~~ to the complement of any of (a)-(d) at (i) 42°C in a buffer comprising 0.015M sodium chloride, 0.0015M sodium citrate and 50% formamide, or (ii) at 65-68°C in a buffer comprising 0.015M sodium chloride and 0.0015M sodium citrate, and wherein the encoded polypeptide, when heterodimerized to human α2 polypeptide, ~~has an activity of the human α2/β10 heterodimer~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation; and

(f) a nucleotide sequence complementary to any of (a)-(c).

3. (Currently Amended) An isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NO: 1 with at least one conservative amino acid substitution, wherein the polypeptide, when heterodimerized to human α2 polypeptide, ~~has an activity of the human α2/β10 heterodimer~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(b) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NO: 1 with at least one amino acid insertion, wherein the polypeptide, when heterodimerized to human α2 polypeptide, ~~has an activity of the human α2/β10 heterodimer~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(c) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NO: 1 with at least one amino acid deletion, wherein the polypeptide, when heterodimerized to human α2 polypeptide, has ~~an activity of the human α2/β10 heterodimer~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(d) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NO: 1 which has a C- and/or N- terminal truncation, wherein the polypeptide, when heterodimerized to human α2 polypeptide, ~~has an activity of the human α2/β10 heterodimer~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(e) a nucleotide sequence encoding a polypeptide as set forth in SEQ ID NO: 1 with at least one modification selected from the group consisting of amino acid substitutions, amino acid insertions, amino acid deletions, C-terminal truncation, and N-terminal truncation, wherein the polypeptide, when heterodimerized to human α2 polypeptide, ~~has an activity of the human α2/β10 heterodimer~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(f) a nucleotide sequence ~~of (a)-(e)~~ comprising a fragment of at least about 16 nucleotides ~~thereof~~ of (a)-(e), wherein the encoded polypeptide ~~said fragment~~, when heterodimerized to human α2 polypeptide, ~~has an activity of the human α2/β10 heterodimer~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation;

(g) a nucleotide sequence which hybridizes ~~under moderately or highly stringent conditions~~ to the complement of any of (a)-(f) at (i) 42°C in a buffer comprising 0.015M sodium chloride, 0.0015M sodium citrate and 50% formamide, or (ii) at 65-68°C in a buffer comprising 0.015M sodium chloride and 0.0015M sodium citrate, and wherein the encoded polypeptide, when heterodimerized to human α2 polypeptide, ~~has an activity of the human α2/β10 heterodimer~~ is capable of regulating thyroidal function or promoting thyroid differentiation or proliferation; and

(h) a nucleotide sequence complementary to any of (a)-(e).

4. (Original) A vector comprising the nucleic acid molecule of Claims 1, 2, or 3.

5. (Original) A host cell comprising the vector of Claim 4.

6. (Original) The host cell of Claim 5 that is a eukaryotic cell.

7. (Original) The host cell of Claim 5 that is a prokaryotic cell.

8. (Currently Amended) A process of producing a polypeptide encoded by the nucleic acid molecule of Claims 1, 2, or 3 comprising culturing the host cell of Claim 5 under suitable conditions to express the polypeptide, and optionally isolating the polypeptide from the culture.

9. (Canceled)

10. (Previously Presented) The process of Claim 8, wherein the nucleic acid molecule comprises promoter DNA other than the native promoter DNA for the β10 polypeptide operatively linked to the DNA encoding the β10 polypeptide.

11. (Original) The isolated nucleic acid molecule according to Claim 2 wherein the percent identity is determined using a computer program selected from the group consisting of GAP, BLASTP, BLASTN, FASTA, BLASTA, BLASTX, BestFit, and the Smith-Waterman algorithm.

Claims 12 - 46. (Canceled)

47. (Original) A composition comprising a nucleic acid molecule of Claims 1, 2, or 3 and a pharmaceutically acceptable formulation agent.

48. (Original) A composition of Claim 47 wherein said nucleic acid molecule is contained in a viral vector.

49. (Original) A viral vector comprising a nucleic acid molecule of Claims 1, 2, or 3.

50. (Currently Amended) A fusion polypeptide comprising a polypeptide encoded by a ~~at least one~~ nucleic acid molecule of Claims 1, 2, or 3 fused to a heterologous amino acid sequence.

51. (Original) The fusion polypeptide of Claim 50 wherein the heterologous amino acid sequence is an IgG constant domain or fragment thereof.

Claims 52 - 60. (Canceled)

61. (Currently Amended) A vector comprising at least one nucleic acid molecule ~~molecules~~ according to Claim 1, 2, or 3, ~~encoding human β10 polypeptide~~ and at least one nucleic acid molecule encoding human α2 polypeptide.

Claims 62 - 64. (Canceled)

65. (Original) A process of producing an α2/β10 heterodimer comprising culturing the host cell of Claim 62 under suitable conditions to express the α2/β10 heterodimer, and optionally isolating the α2/β10 heterodimer from the culture.

Claims 66 - 99. (Canceled)